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## REMARKS

## Pending claims

Claims 1-32 are still pending, of which claims 1, 27, and 28 are independent claims. The applicants are not requesting any new amendments to the claims.

## Claim Rejections Under 35 U.S.C. §103

In this latest Office action, the Examiner again rejected claims 1-3, 9-11 and 25-32 under 35 U.S.C. 103 as being unpatentable over US 2002/0143842 (*Cota-Robles*). The central point of disagreement at this point is found in paragraph 6 of the Office action. This reads, in pertinent part:

6. "... Cota-Robles disclosed that there are to be 'zero or more' transformations, which implies that the transformations may be wholly unnecessary (paragraph [0027]). Therefore ... Cota-Robles suggests transformation may not be necessary (adjunct, optional, or not required) for proper completion of the input/output operations."

The applicants do not dispute that there may be at least one embodiment of *Cota-Robles* that does not require any kind of transformation (that is, in *Cota-Robles*' case, redirection), but this is beside the point: *Not* performing any kind of transformation when it is *not* necessary is in every computer system and is certainly not new. When writing the Office action, the Examiner's computer issued thousands of I/O requests that were completed as intended, with no change from the normal course of processing – every time the Examiner pushed a key on the keyboard, this led to or was part of an I/O request that was processed without any unexpected transformation, such that the expected alphanumeric character, or cursor control, etc., was reflected in the display on the Examiner's monitor. When, while writing the office action, the Examiner pushed the "A" key, an "A" presumably appeared on her screen.

In *Cota-Robles*, the only instances in which "zero transformations" are performed is when system memory can be directly accessed by the residual fixed function hardware device 204. Note that the only concept of "transformation" *Cota-Robles* explicitly discloses is in [0015] and is simply a boilerplate definition of "writing" to a memory device or register, namely, the conversion of "*physical* (electronic) quantities."

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In both instances *Cota-Robles* mentions in [0027], however, the operations (zero or more) are still done *"in order to effect the operation requested by the guest OS 106"* or *"in order to complete the requested operation."* Moreover, it appears from the brief mention in [0027] that the "zero-transformation" mechanism in these cases is simply the writing to a shared ("at a predefined location") memory location. In other words, instead of the address *redirection* used in every other embodiment, these "zero-transformation" embodiments simply rely on a well-known *indirection* technique.

Consider the following analogy: Sender wants to send a letter to Recipient, so Sender puts the letter in the mail box. If Post Office determines that Recipient is actually at the address, then Post Office sends the letter through normal channels. If, however, Post Office determines that Recipient cannot be reached, but that there is a forwarding address to another Entity that handles correspondence for Recipient, then Post Office changes the address on the envelope to Entity's and delivers the envelope to Entity for response. This is what *Cota-Robles* does, in the context of an I/O request from a main virtual machine: Forward the request where possible but redirect it to the dedicated virtual machine when direct access is not possible. As explained before, in every case where *Cota-Robles* redirects an I/O request, it is because it is *impossible to complete the request otherwise*. *Cota-Robles's* redirection is *never* "adjunct to necessary completion of the request."

In contrast, the applicants' invention as claimed does not concern itself with the *possibility* of completing an I/O request as intended or assumed by the user, regardless of the relative compatibility of the host OS and a host processor soft device. Continuing with the example, the applicants' invention may indeed redirect Senders' letter (one example of a transformation mentioned in the specification – see for example [0079]), but it does this even if the Recipient shown on the "envelope" is actually present and could receive Sender's letter. Moreover, in several claimed embodiments, the applicants' invention actually changes the *contents* of Sender's letter, that is, what is *inside* the envelope, regardless of the address. *Cota-Robles* simply never mentions this possibility.

The differences between *Cota-Robles* and the applicants' invention can be illustrated by the following table:

		Action performed?	
		Yes	No
Action necessary?	Yes	I	II
	No	III	IV

*Cota-Robles* deals only with contexts I and IV, and the only action *Cota-Robles* ever teaches is I/O redirection (or, in context IV, at least partial indirection):

<u>Cota-Robles</u>		Redirection performed?	
		Yes	No
Redirection necessary?	Yes	X	-
	No	-	X

The applicants' invention can apply many different types of transformations, but all in a different context, namely III, where the action is the transformation of I/O data:

<u>Invention</u>		Transformation performed?	
		Yes	No
Transformation necessary?	Yes	-	-
	No	X	-

Context III is the only one in which an action is actually taken that is not needed at all. *Cota-Robles* does not ever mention context III, which is the context in which the invention operates.

Under point 54 (in the Response to Arguments section) of the Office action, the Examiner wrote:

54. "In the remark applicant argued that *Cota-Robles* fails to teach transforming being adjunct to necessary completion of the request as issued for the I/O operation, since *Cota-Robles* disclosed that there are to be 'zero or more' transformations (i.e. performing zero (no) transformation is not the same as performing a transformation."

The applicants completely agree that "performing zero (no) transformation is not the same as performing a transformation," since this is just another way of saying that context IV is not the same as context I. The issue is whether the transformation is *necessary*, and *Cota-Robles* teaches transformation only when it *is*. Thus, that context I is different from context IV does not in any way suggest that either one is the same as context II.

Furthermore, under point 55 of the Office action, the Examiner wrote:

55. [Citing *In re Fulton*]: "Therefore the fact that *Cota-Robles's* system can perform zero transformation when one is not necessary, does not teach away from performing the transformation when it is necessary. Thus, there is an alternative that at least one transformation is performed. Therefore, it would have been obvious ... to have recognized that *Cota-Robles* teaches transforming being adjunct to necessary completion of the request as issued for the I/O operation."

This is the same as saying that the ability to handle context IV does not teach away from the ability to handle context I. Again, the applicants completely agree, since *Cota-Robles* clearly handles both I and IV. However, this has nothing to do with the ability to operate in context II, which *Cota-Robles* never implies his ability to do.

It would also not be obvious to attempt context II operation just because of *Cota-Robles*'s teachings regarding I and IV. The current standard for determining obviousness is the well-known "teaching-suggestion-motivation" test, which the Court of Appeals for the Federal Circuit very recently upheld in both Alza Corp. v. Mylan Laboratories, (Fed. Cir.No. 06-1019, 09/06/2006), and DyStar Textilfarben GmbH v. C.H. Patrick Co., (Fed. Cir. No. 06-1088, 10/3/2006). The teachings of *Cota-Robles* fail *all* of these three tests.

The applicants have repeatedly pointed out that *Cota-Robles* fails to teach "performing a transformation of I/O data passing between the VM and the device, said transformation being *adjunct to necessary completion of the request, as issued*, for the I/O operation." Indeed, the Examiner admits this too, since she cannot show any disclosure in *Cota-Robles* that states this, but rather she asserts (point 6 of the Office action) that *Cota-Robles* "implies" this. Thus, the Examiner appears to be relying on an assertion that *Cota-Robles* suggests the invention. The applicants have also explained in detail why *Cota-Robles* does not suggest adjunct transformation either, since contexts I and IV are simply not related to context II.

There is also no reason for *Cota-Robles* to perform adjunct transformation, that is, *Cota-Robles* has no *motivation* either. First, unnecessary ("adjunct") transformation is totally unrelated to the stated goal of *Cota-Robles*, which is "constructing host processor soft devices independent of the host processor operating system" ([0001] and in many other paragraphs) and even making them "VMM independent" ([0032]). Second, *Cota-Robles* writes of the problem of latency in existing systems. For example, *Cota-Robles* states: "In addition, Windows-based soft devices suffer from excessive latency in the host operating system because Windows operating systems lack real-time quality of service (QoS) guarantees" ([0003]) and "such a soft device is immune to latency in the host OS because its driver is executed in a dedicated virtual machine" (again [0032]). Deliberately performing a data transformation when one is not necessary not only does nothing to increase OS and VMM-independence, but it also adds extra processing steps, and thus latency, to the I/O operation. Note that, for example, claims 12 and 13 (deliberate bandwidth

limiting and deliberate time delay) recite specifically *causing* less efficiency in some sense.

None of the cited secondary references makes up for the main failure of *Cota-Robles* to teach "performing a transformation of I/O data passing between the VM and the device, said transformation being adjunct to necessary completion of the request, as issued, for the I/O operation." Of course, this is not actually a "failure" as such on *Cota-Robles*'s part, since this feature has nothing to do with the purpose of *Cota-Robles*'s system. As such, the independent claims of this application should be allowable in view of any, and any combination, of the cited references.

Many of the dependent claims (for example, 2, 6, 9, 12, 13, 15, 19, 20, etc.) define embodiments of the invention that involve transforming the *contents* of an I/O request, such as replacing all or part of a display with some other whole or partial image. This is also a feature wholly lacking in *Cota-Robles*. In other words, these embodiments "open the envelope" and change what is inside the "letter" itself, before the "letter" is sent on to its assumed, intended destination device. *Cota-Robles* never discloses transforming the actual content (as opposed to address) of data that is being transferred between any two entities, since this is irrelevant to the purpose of his system. *Cota-Robles* does not concern himself with *what* the "main virtual machine" VM#2 wants to transfer to some host-based soft device, but rather only with how to effect the transfer, preferably independently of the host operating system, even where the "real" software and hardware may not be actually present. Here, by "real," is meant "of the type assumed to be present by the guest OS."

The applicants therefore respectfully submit that all of the claims should be allowable over the prior art of record.

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**Request for Telephone Conference**

The applicant's attorney requests the opportunity to discuss this case by telephone (please use the phone number shown below) with the Examiner if she still feels that the claims are not allowable. Since the difference between *Cota-Robles* and the invention as claimed is so clear, it seems possible that the Examiner is looking for some more clarification in the claims of the concepts of "I/O data" and "transformation." A phone call might help avoid several more rounds of Office actions/responses, RCEs, and a possible appeal. Thank you.

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Respectfully submitted,



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